

Protective Resemblance.

BY R. E. KUNZE, Phoenix, Arizona.

Having during the past nine years extensively collected of the insect fauna of Arizona, some striking observations of the means resorted to by insects for purposes of self-protection have presented themselves. Insects suddenly started up from a place of rest or after pursuit of an enemy, will instinctively drop into a place of concealment, which it is difficult to detect. Many Rhopalocera rifle the flowers which most nearly agree with the colors of the upper surface of their wings, while others, with folded wings, admirably succeed in escaping detection.

Near Tucson I observed *Terias mexicana* feeding on flowers of *Acacia filicina*, a perennial plant two feet high, bearing white flowers and growing on the banks of ditches. This *Acacia* much resembles a sensitive plant, and affords ample protection to *mexicana*. Flowers the size of a thimble cover the axillary space of the leaf, and the greenish yellow of the insect is well protected by many bipinnate leaves and blossoms. *Anthocharis pima*, the earliest of our diurnals which flies in Maricopa County, alights on the yellow blossom of *Anisnickia spectabilis*, a hirsute annual found on sides of mountain and tableland. The small flowers crowded at the point of short racemes furnish a secure place for our golden *pima*. *Helenium hoopesii*, hardly distinguishable from the eastern elecampane, affords a safe retreat for *Gnophæla discreta*. This day-flying moth rests on the brownish-black disk of the larger yellow flowers, and when disturbed takes refuge on another flower of *Helenium*. Toward evening I have observed as many as three and four *discreta* resting on a single flower, so that one could push several into a cyanide bottle with perfect ease. This plant is found in moist canyons or near springs, at an altitude of 9,000 to 10,000 feet on the San Francisco Mountains, near Flagstaff. Another day-flying moth, *Melanchroia inconstans*, feeds on this same plant, and its bluish-black color quite harmonizes with the disk of *Helenium*. *Inconstans* is a little wary geometer, very hard to approach in the hottest sunshine, and I had to secure all with a net secured to an extension pole. Higher up on the mountain I have noticed *inconstans* resting

on the dark disk of *Rudbeckia laciniata*, another large yellow-flowered composite plant.

The orange-colored flowers of *Asclepias tuberosa*, well named the butterfly-weed, furnish nectar for *Argynnis nausicaä* and *Lemonias nais*, in the early part of the season, and are quite protective to these insects. At the headwaters of the Hassayampa these insects are found, and of *nausicaä* I have only seen two other examples near Flagstaff. So far I have not met with any other species of *Argynnis* in this territory. *Pieris protodice* is usually found on *Nasturtium officinale* or watercress, and when this plant is out of bloom may be looked for on the white flowers of *Dithræa wislizeni*, a crucifer found in the bottoms on the sandy banks of streams. This plant has very glaucous leaves and stems, flowers several times during the year, from early February until December, and is a favorite food plant of *protodice*. Rarely have I observed this white insect alight on any other colored flower.

Thecla apama feeds on the white flowers of *Ceanothus fendleri*, and when disturbed seeks refuge among the foliage of the same shrub. The bright green of the reverse side of the wings agrees perfectly with the color of the leaves. When frightened, I have seen it alight on the needles of *Pinus ponderosa*, if a bush of *Ceanothus* stood not conveniently near. *Apama*, with its wings folded, defies detection, illustrating mimicry in the fullest sense.

Pamphila bellus. This bluish-black skipper, with yellow fringe on its wings, is usually feeding on the prominent yellowish cones of *Rudbeckia laciniata*. It is not often observed on any other but this cone-flower. *Eudamus cellus* is its companion in the Huachuca Mountains, rifling the yellow flowers of *Rudbeckia*. On this flower *bellus* seems to be less protected than *cellus*.

Libythea bachmani, when frightened off the white flowers of *Baccharis emoryi*, an evergreen shrub, on which it feeds in September, selects for refuge the dry stems of the same plant, and with closed wings it is not easily discovered. The gray color of the dead twig and that of its wings on reverse side makes it wonderful to behold.

Cyphus placidus, a light green Curculionid of an almost glaucous color, a rare insect of Arizona, is one of the beetles defying detection. In September, 1898, I was entomologizing one day with the late Dr. H. G. Griffith, who came here to recuperate. We had collected species of *Nemognatha* from sunflowers, and *Crossidius intermedius* from *Ludvigia hardwickii*, when of a sudden, on our return to town, with an exclamation of joy and surprise, the doctor picked a *placidus* from the lapel of his coat, which in brushing through the net had dropped thereon. We made repeated search among the plants examined but could find no more. Subsequently I found the second *placidus* resting on flowers of *Ludvigia hardwickii*, the flower or leaf of which was not protective. Next to it grew a bush of *Atriplex torreyi*, the color of which in foliage and stem fully agreed with this beetle. I beat the bush vigorously and secured another such Curculionid, and from this time onward have succeeded in taking a few every year or two. I have often tried to discover this beetle on bushes from which it was obtained by beating, but very seldom succeeded. This Curculionid clings to the glaucous stem, which is of the same tint as the entire insect, and also agrees with the color of the leaf.

Ludvigia hardwickii is an evergreen shrub in this valley, producing yellow flowers at the point of each branch. This flower, appearing in dense masses is the host of *Crossidius intermedius*, a longicorn of a buff color with a black stripe between the elytra. This beetle is hidden between the closely appressed flowers, so that only its head and antennæ appear above the level of the flowerhead. The long antennæ serve to recognize this insect, which, on account of color and method of concealment, is rarely observed by anyone except an entomologist. The red cup-shaped flower of *Sphaeralcea ambigua*, growing in desert arroyos, is the host of *Trichodes ornata*, a beautiful red and black beetle. The environment is quite protective in every sense to this finely colored insect, a variety of which is black and yellow in ornamentation.

The disk of the ubiquitous sunflower is a favorite place for species of *Nemognatha*, especially *luridus*, and *Gnathium*

minimum. These flower beetles prefer *Helianthus* to any other yellow composite, inasmuch as the yellowish or buff color harmonizes with the host. The most of our Malachidæ are found on the pale yellow flowers of *Prosopis juliflora*, or mesquite, especially in a season when there is a good honey flow. The color of flowers and insects is very similar.

That brilliant little Curculionid, *Magdalis lecontei*, if rightly informed, I always found on the needles of young *Pinus ponderosa*, high up in the Pinal Mountains. The iridescence of this beetle, predominating in a greenish violet, affords much security in the clustered needles of the pine. It flies in July. On the young shoots of the same pine I found *Polyphylla variolosa* in hiding. Before the expansion of the leafbud it is of a reddish-brown color, protective to this chestnut-colored June-bug. On the same young shoots I found a good-sized red Longicorn, the name of which I have forgotten, and which is quite uncommon. A lobate-leaved *Quercus*, as well as the leaves of the mountain walnut, just as dusk sets in, attracts the emerald *Plusiotis lecontei*, which this "gold-bug" as it is called in Arizona, alights on. *Plusiotis gloriosa*, popularly known as "silver-bug" in Yavapai County, because of the silvery stripes on its green elytra, prefers the glaucous leaves of *Juniperus occidentalis*, var. *monosperma*, which more nearly harmonizes with this beautiful beetle. The leaves of this juniper are silver-tipped and the young foliage is tinted bluish-green. *Plusiotis worthii*, another great rarity, I took a few of in the Huachuca Mountains, found resting in bright sunshine on the leaves of an evergreen oak, *Quercus emoryi*. The color of *worthii* is a glossy pea-green with lavender legs; it is as large as *Polyphylla variolosa*. The green glossy leaves of this oak are in perfect touch with this fine insect.

Psiloptera drummondi, a black Buprestid with an orange stripe across the thorax, affects the brown stems of old mesquite bushes during September, and is not readily observed until it moves around the branch trying to elude the pursuer. *Chrysobothris 8-punctata* often is found in company on the same host, its dark-brown color agreeing with the mesquite bark. A much larger Buprestid, black with a purplish sheen,

and when fresh yellow-dusted, is resting on the green branches of *Parkinsonia microphylla*, otherwise known as the "Palo Verde" of our desert. The latter is a small tree from ten to fifteen feet high, and this beetle has a fondness of resting on the higher branches of this thorny *Parkinsonia*, so that we have to use a net fastened to an extension pole. The much smaller *Sphænotica saturnalis* rests on dead branches of the same wood, the darker color of which is quite protective. Another fine Buprestid, *Gyascutus obliterated*, heavily dusted with yellow powder, and the ground or body color being of a greenish-gray, is found on young "Palo Verde," the stems of which are bright green. Under a glaring hot sun in May or June this beetle is very alert, and a silken net is soon torn to pieces by the long thorns of this shrubby tree. The bark and thorns of very young "Palo Verde" much resemble *obliterated*.

The highly polished black *Acmaeodera gibbula* Horn, which has a row of scarlet spots on the outer border of the elytra, I take early in April on the leafless branches of *Acacia greggii*, known as the "Cat's-claw bush" in Arizona. The bark of this *Acacia* is brown, covered here and there with dead epidermis, especially in the fork of branchlets. This *Acmaeodera* clusters around these blackish spots and is not easily detected. Frequently it rests on the tip end of a branch. I gave some of these beetles to Dr. H. G. Griffith when he collected here, who sent them for determination to Mr. Fall, and the latter returned them as nov. spec., labeled *A. griffithii*. My insects had been previously compared with *gibbula* of Dr. Horn's collection, and so named.

The green branches of *Salix occidentalis* furnish the feeding place of that handsome *Chalcolepidius smaragdinus*, the most brilliant elaterid of Arizona. *Smaragdinus* is a gem of great rarity, and very uneasy when detected. *C. webbia* and *C. tartaricus*, both of bluish-green with a border of white hair around elytra, affect any kind of a willow branch, and even suck the sap from a wounded limb.

Probably for safety, *smaragdinus* ascends to the topmost branches, always the greenest of willow. When frightened it alights on the broad leaves of *Salix*, and quickly runs up the

stem, where the color is most protective. The shaking of a limb in ascending a tall willow quite often causes this *rara avis* to take flight, to the dismay of a collector.

A large green grasshopper, *Schistocera shoshone*, in the early part of summer, is found hiding among the green foliage and resting on a green stem of mesquite. Later in autumn it affects the leaves of cottonwood,—*Populus fremontii*,—as well as of *Salix fluviatilis*, the only trees and shrubs retaining green leaves until the latter part of December, in the Salt River Valley. There *shoshone*, as well as a *Xiphidium*, find a secure resting place.

Numbers of Mantids of many hues,—carneous, green, gray and brown,—select the leaves or stems of plants in unison with their own colors, and usually fully illustrate color protection. *Mantis religiosa*, quietly and patiently, with uplifted forelegs, may be noticed awaiting the approach of some other insect, and pounces upon it like a tiger upon his prey. This peculiar attitude has been likened by Mexicans to a child with uplifted hands engaged in prayer, and the popular name, “Niña de la tierra,” child of the earth, has been bestowed upon this insect.

A Bee Visitor of Pontederia (Pickereel-weed).

BY H. L. VIERECK.

Within the last five years I have received specimens of an interesting bee which seems to represent a new genus and species belonging to the Dufoureidæ and closely allied to *Halictoides* as represented by *H. marginatus* Cress. The first specimen that came to me was a male, taken at Darby, Delaware Co., Pa., August 10, 1899, by Mr. C. W. Johnson; the next specimen was a female, collected at Chestertown, Md., August 12, 1901, by Mr. E. G. Vanatta. Last year I received the first specimen with flower record from Mr. J. H. Lovell, who later sent me, in all, one female and ten males, taken on *Pontederia cordata* L., July 20, at Waldoboro, Me. I quote Mr. Lovell's interesting notes on the capture of these specimens. “On the afternoon of the 20th of July I was on the river in a boat. A thunder-shower was coming up in the northwest. The air